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Measuring Common Responses to Psychosis: Assessing the Psychometric Properties of a New Measure

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Abstract

Responses to psychotic experiences are central to cognitive models of psychosis. The current study aimed to develop and validate a self-report measure of common responses to the experience of psychosis. This measure is needed as cognitive and behavioural responses are implicated in the maintenance of psychosis, but there is currently no measure that comprehensively assesses these maintaining factors. The Measure of Common Responses to psychosis (MCR) was developed and utilised in a sample of 487 participants who met criteria for treatment-resistant schizophrenia. Principal components analysis using data from 287 participants reduced the initial item pool of 31 items to 15 items with a three component structure. The components represented social control and reassurance seeking, threat monitoring and avoidance and conscious self-regulation attempts. Confirmatory factor analysis using data from the remaining 200 participants generally supported this three factor structure. The three subscales were found to have good internal consistency and convergent validity. The MCR, therefore, appears to be a useful tool to identify and monitor response styles, and could be utilised in further research to increase our understanding of the complex relationships between responses, symptoms and distress. It can also be used in clinical practice to elicit information that will be helpful in the psychological formulation and treatment of psychosis.

Keywords: schizophrenia; psychosis; safety-seeking behaviors; coping; self-regulation

1. Introduction

Ways of responding to psychotic experiences are central to psychological models of the maintenance of distressing psychosis (e.g. Garety et al., 2001; Morrison, 2001). These experiences can be responded to using a range of strategies. Safety-seeking behaviours are considered to be unhelpful strategies used to manage the distress arising from a catastrophic misinterpretation of a situation (Salkovskis, 1991). Safety-seeking behaviours are thought to be unhelpful due to the fact they do not allow for such threat appraisals to be evaluated (Salkovskis, 1991). In contrast, coping responses are defined as cognitive and behavioural strategies employed to manage stressful situations (Lazarus and Folkman, 1984). Such responses are thought to be helpful because they are intended to manage the distress alone and not a faulty threat appraisal (Salkovskis, 1991).

There are problems with this conceptualisation, however, as it does not allow for situations where there is a real threat or for ineffective use of coping, even in the absence of a misinterpretation of threat. Some studies have also shown that safety-seeking behaviours can be carefully used during exposure therapy without having a counterproductive impact (Milosevic and Radomsky, 2008). Further, differentiating between safety seeking and coping can be difficult as responses may appear behaviourally to be the same, and it is only the appraisal driving the behaviour that differs.

There are several measures to assess other parts of the cognitive model; for example, appraisals can be assessed by The Beliefs about Paranoia Scale (BAPS, Morrison et al., 2005) and distress using the Calgary Depression Scale for Schizophrenia (CDSS, Addington et al., 1992). However, there is no existing measure to comprehensively assess cognitive and behavioural responses to psychosis.

As responses are considered a key aspect of the cognitive model, a measure is needed to aid in the assessment and monitoring of this. One measure has been developed to assess safety-seeking behaviour in people with psychosis. An interview measure, the safety behaviour questionnaire (SBQ), has been developed in samples of people experiencing persecutory beliefs (Freeman et al., 2001). It has been found to be reliable and valid overall; however, there were some issues with reliability of some of the sub-scales (Freeman et al., 2001). Further, the SBQ has not been factor analysed and, therefore, its construct validity is unknown. It also cannot be administered by self-report. A self-report measure of responses specific to paranoia has been developed; however, this was developed in a non-clinical sample and the responses include emotional and physical reactions, so is not a specific measure of cognitive and behavioural responses (Lincoln et al., 2010).

A self-report measure has been developed for use with voice hearers (Chadwick and Birchwood, 1995). However, this only captures two behavioural response styles, resistance and engagement, and is specific to voice hearing.

There are numerous measures that are used to assess coping; however, these have generally been designed and validated in non-clinical samples (e.g. The COPE, Carver et al., 1989). Despite this, they have been used effectively in research using samples with a schizophrenia diagnosis (e.g. MacAulay and Cohen, 2013). The Ways of Coping Questionnaire (WCQ) has been adapted for use with psychosis samples specifically and has been found to be a reliable and valid measure (Lysaker et al., 2004). However, as this was an adaptation of the existing measure, the subscales were decided upon a priori, rather than through exploration of the data (Lysaker et al., 2004).

A measure of coping that has been developed specifically in a psychosis sample is the Maastricht Assessment of Coping Strategies (MACS, Bak et al., 2001). It is composed of five factors, active problem solving, passive and active problem avoiding, passive illness behaviour and symptomatic behaviour (Bak et al., 2001). This interview based measure allows the participant to freely report their own idiosyncratic coping strategies, and so makes comparison between participants difficult.

Since there is no self-report measure that comprehensively assesses cognitive and behavioural responses to psychosis, which are an important component of cognitive models, we aimed to develop and validate a self-report measure that incorporates both safety-seeking behaviours and coping responses specific to distressing psychotic experiences in a clinical population.

2. Method

2.1 Participants

Participants were 487 individuals recruited as part of a separate clinical trial looking at the effectiveness of Cognitive Behavioural Therapy (CBT) for clozapine resistant schizophrenia (The FOCUS Trial). Participants were eligible to take part if they were considered to have had an inadequate response to clozapine, specifically treatment of clozapine at a stable dose of 400mg or more (unless limited by tolerability) for at least twelve weeks, or if currently augmented with a second antipsychotic that this had been given for at least twelve weeks, without remission of psychotic symptoms. Alternatively, participants could have discontinued clozapine in the past two years.

Participants were required to score a minimum total score of 58 on the Positive and Negative Syndrome Scale (PANSS) as well as 4 or more for either delusions or hallucinations or 5 or more for

suspiciousness or grandiosity. They all had an identified care coordinator or consultant Psychiatrist and had not received CBT in the past twelve months. Exclusion criteria were a primary diagnosis of substance or alcohol dependence, diagnosis of developmental disability, organic impairment and non-English speaking. Participants were recruited from five sites across the UK (Manchester, Southampton, Newcastle, Glasgow and Edinburgh).

The sample characteristics can be seen in Table 1.

Table 1: Sample characteristics

2.2 Measures

The PANSS (Kay et al., 1987) is a 30-item semi-structured interview to assess the severity of psychotic symptoms. Seven items assess positive symptoms, seven items assess negative symptoms and 16 items assess general psychopathology. All items are scored between 1 (absent) and 7 (extreme).

The Psychotic Symptom Rating Scale (The PSYRATS, Haddock et al., 1999) is a semi-structured interview with twelve items assessing aspects of voice hearing such as frequency, volume, distress and disruption, and six items assessing aspects of unusual beliefs such as preoccupation, distress and disruption. All items are scored from 0 to 4.

The Anxious Thoughts Inventory (The AnTI, Wells, 1994) is a 22-item self-report questionnaire designed to measure aspects of worry. Each question is scored from 1 (almost never) to 4 (almost always). This study used only the 7 item meta-worry scale.

The Measure of Common Responses to Unusual Experiences (MCR): This measure was developed for this study. A large item pool was developed and refined through reference to the existing literature and through consultation with specialists in the field of interest (Bowling, 2014; Rattray and Jones, 2007). Measures already available in this area such as the Safety Behaviour Questionnaire (Freeman et al., 2001), the Fear questionnaire (Marks and Mathews, 1979), the Thought Control Questionnaire (Wells and Davies, 1994) and other measures of anxiety (Wells, 1997) were reviewed for key themes covered. Items were not taken directly from these but were generated on the basis of these themes. Experts in the field were then consulted. The first author attended a meeting of a Service User Reference Group (SURG). They were asked for their feedback on which items should be included in the measure, the wording and order of the items and also the wording of the instructions for completion. The measure was amended following the comments made by The SURG. Two

Clinical Psychologists and two Psychiatrists were then consulted and items were further amended following their suggestions.

Through the consultation process the wording of the items was refined and the number of items was reduced to 31. The instructions and final items are included in Appendix 1.

Participants were asked to rate how frequently they used each response using a scale ranging from 1 (never) to 4 (almost always).

2.3 Procedure

The results reported here are taken from measures given at the baseline assessment for the FOCUS Trial. Assessments normally lasted one to two hours and in the majority of cases were conducted in the participant's own home. Participants were paid £10 for completion of this assessment.

2.4 Statistical analysis

Data was initially explored with principal components analysis (PCA) using data from a randomly selected subset of 287 participants from the overall sample. Internal consistency was assessed using Cronbach's alpha. For the purposes of test-retest reliability analysis, data from the 9-month follow-up assessment was used for the treatment as usual group only (this data was analysed by an independent statistician to maintain blinding of assessments). Although this is a longer timeframe than usual, our participants are considered to be "treatment resistant" and, therefore, experiencing chronic and persistent symptoms (Meltzer, 1997). Thus, it was assumed that those participants not allocated to the treatment arm of the trial were likely to be stable over this period.

Data from the remaining subset of 200 participants was used for confirmatory factor analysis (CFA) using AMOS (version 22). Finally, data from the full sample of 487 participants was used to assess convergent validity by looking at correlations between each subscale and the other measures included.

3. Results

3.1 Reliability and factor structure: PCA with oblique rotation (direct oblimin) was conducted including all 31 items from the MCR. The Kaiser-Meyer-Olkin statistic indicated that the sample size was adequate for conducting a PCA (KMO = 0.835). Bartlett's test of sphericity was also found to be significant ($\chi^2 (465) = 1956.223, p < .000$).

The scree plot suggested that 3 components should be retained, based on Cattell's guidelines for including the component at the point where the scree plot flattens out (Cattell, 1966). Parallel analysis confirmed that 3 components reached significance (O'Connor, 2000), therefore, 3 components were extracted. Items were considered to load on to a component if the loading was greater than 0.4. Where items did not load at above 0.4 on any of the components or loaded at above 0.4 on two components without a difference of 0.2 between them, these items were removed.

This initial solution comprised of 19 items that accounted for 44.85% of the variance. The components were interpreted through discussion of the meaning of the highest loading items on each component (Kline, 1994). The seven items that loaded on to the first component related to conscious self-regulation attempts ($\alpha = 0.750$), the second component had seven items relating to threat monitoring and avoidance ($\alpha = 0.760$). The third component had five items and related to social control and reassurance seeking ($\alpha = 0.746$). Deleting one item from the conscious self-regulation attempts scale improved the alpha for that scale and so this item was dropped. The other lowest loading items were then dropped so that each sub-scale consisted of five items. It was decided to make the subscales equal length for ease of comparison as has been done in the development of other scales (e.g. Wells and Davies, 1994). The final 15 item solution was found to account for 50.59% of the variance. The final component matrix can be seen in Table 2, along with the alphas for each subscale and test-retest reliability, which was calculated using the intraclass correlation coefficient for each subscale.

Table 2: Results of the principal components analysis

3.2 CFA: The three component solution was modelled. A non-significant chi-square result indicates a well-fitting model. In this case the chi-square was found to be significant ($\chi^2(87) = 169.814$, $p = 0.000$). However, as chi-square can be problematic in samples of 200 or more (Hoe, 2008), the adjusted chi-square (CMIN/DF) was looked at as this can provide a more accurate indicator in larger samples. This was found to be acceptable as it was lower than the suggested cut-off of 3 (1.952, Hoe, 2008). The RMSEA is considered acceptable if it is below 0.08 (Hoe, 2008) and ideally below 0.06 (Hu and Bentler, 1999). The RMSEA found here was 0.069, indicating adequate fit. The GFI reached the suggested cut off of 0.9 (0.901). SRMR was 0.0784, indicating good fit (<0.08 , Hu and Bentler, 1999). The CFI did not meet the recommended cut-off of 0.90 (0.809), and neither did the TLI (0.769, Hoe, 2008), therefore the minimum requirement for adequate fit was not met for the final two indices. Modification indices suggested adding covariances between two error terms on the social control scale and two on the self-regulation scale. These made theoretical sense and

improved the fit as follows: $\chi^2(85) = 151.79$, $p = 0.000$, $\text{CMIN/DF} = 1.79$, $\text{RMSEA} = 0.063$, $\text{GFI} = 0.913$, $\text{SRMR} = 0.0768$, $\text{CFI} = 0.846$, $\text{TLI} = 0.809$.

3.3 Convergent validity: Correlations were conducted between factor scores on each component and items that they were theoretically predicted to relate to from the other measures.

Conscious self-regulation attempts: As this component relates to deliberately trying to think about and control experiences, it was thought that this could relate to preoccupation with beliefs as measured by the PSYRATS, as this assesses the frequency and duration of thoughts about unusual beliefs. It was also expected to be related to the meta-worry scale of the AnTI, as this includes similar concepts relating to awareness of thoughts such as “I worry that I cannot control my thoughts as well as I would like to” (Wells, 1994). Predictions were partially supported as a significant correlation was found with meta-worry ($r = 0.115$, $p = 0.019$) but not with frequency and duration of preoccupation with unusual beliefs ($r = 0.043$, $p = 0.369$).

Threat monitoring and avoidance: Based on the work of Freeman et al (2001) it was expected that this subscale would relate to paranoia and anxiety. They found that in participants with persecutory beliefs, avoidance was the most commonly used safety seeking strategy and that this was associated with anxiety. Active social avoidance was also chosen as a similar concept to threat monitoring and avoidance, as this measures reduced social contact due to fear or distrust (Kay et al., 1987). Paranoia, anxiety and active social avoidance were all measured by the PANSS. Significant positive correlations were found with suspiciousness ($r = 0.281$, $p < 0.001$), anxiety ($r = 0.343$, $p < 0.001$) and active avoidance ($r = 0.408$, $p < 0.001$).

Social control and reassurance seeking: This component was predicted to be negatively associated with each of the social items measured by the PANSS. These are active social avoidance, passive or apathetic social withdrawal and emotional withdrawal. The latter two measure reduced social involvement due to apathy or avolition and a lack of interest in people and events in the surroundings (Kay et al., 1987). Significant negative correlations were found with each of the social items: active avoidance ($r = -0.166$, $p = 0.001$), passive withdrawal ($r = -0.154$, $p = 0.001$) and emotional withdrawal ($r = -0.263$, $p < 0.001$).

Correlations were also conducted between each subscale and PANSS items. The results of this are shown in Table 3.

Table 3: correlations between subscales and PANSS items

4. Discussion

4.1 Summary of results

This study was able to develop and provide preliminary validation of a self-report questionnaire to assess cognitive and behavioural responses to the experience of psychosis, which are an important aspect of cognitive models of psychosis.

The final measure comprised fifteen items forming three subscales labelled conscious self-regulation, threat monitoring and avoidance, and social control and reassurance seeking. These three subscales were found to have acceptable levels of internal consistency, with Cronbach's alpha of above 0.7 (Nunnally, 1978). Confirmatory factor analysis supported the three component structure with most indices indicating a good fit.

Although the effects were small, correlations of the subscales with measures of psychosis and meta-worry demonstrated convergent validity. Most predictions were supported, suggesting the subscales are a valid representation of the construct they are thought to be measuring. The exception was that the self-regulation subscale did not correlate with preoccupation. However, it may be that these are measuring slightly different concepts. The PSYRATS is specifically measuring frequency and duration of preoccupation with unusual beliefs whereas the self-regulation scale found here reflects specific strategies used in response to distressing experiences.

It was found that the component relating to threat monitoring and avoidance correlated positively with all PANSS items. This has been a consistent finding in both the safety-seeking and coping literature suggesting that avoidant strategies are associated with greater symptom severity. For example, it has been found that avoidance is the most commonly reported response in relation to persecutory beliefs and is positively associated with anxiety (Freeman et al., 2001; Freeman et al., 2007) and both positive and negative symptoms (Depp et al., 2011).

Correlations were not found, however, between the other two subscales and PANSS items, suggesting these response styles were not related to symptom severity. This could be because any strategy could be helpful or unhelpful depending on how it is used, by whom and other contextual factors. The coping model presented by Lazarus and Folkman (1984) allows for this flexibility as it takes into account the relationship between the person and their environment and, therefore, responses can change both across and within situations (Lazarus and Folkman, 1984). Therefore, any particular response in itself cannot be considered helpful or unhelpful without these contextual considerations (Lazarus and Folkman, 1984). This suggests that care should be taken in clinical work to analyse individual's responses in each situation and to take a flexible approach that acknowledges that responses are not always unhelpful. The three components found also overlap with a cognitive

attentional syndrome, outlined in the Self-Regulatory Executive Function model (Wells and Matthews, 1994) which describes a coping style involving strategies such as perseverative thinking, focus on threat cues and self-focused attention.

Test-retest reliability was found to be below the usually accepted cut-off of 0.7 (Terwee et al., 2007). This could be a reflection of the changeable nature of responses to distress, dependent on person, place and time (Lazarus and Folkman, 1987). If responses to distress are thought of as a process in this way, then a measure of response styles may not be expected to be stable over time. In this population difficulties with sedation, memory and concentration can be observed due to high doses of clozapine and so these factors could have also had an impact. Alternatively, it is likely that nine months is too long a time frame to expect stability when the ratings are anchored in the last two weeks, even in a sample considered to be 'treatment-resistant'.

4.2 Strengths and limitations

A large clinical sample of participants was used, suggesting that results should be generalizable within this population. The sample was also randomly separated into one sample of 287 and one of 200, and the same factor structure was supported in both samples.

Following the CFA, some of the fit indices were found to be below the generally accepted cut-off. This could suggest that some further refinement of the subscales is required.

As the components found here show overlap with the Thought Control Questionnaire (Wells and Davies, 1994), it is a limitation that this measure was not used to assess incremental validity; however, the TCQ was developed in non-clinical participants and our measure was developed using a large clinical sample.

Use of symptom measures for convergent validity could create a problem as responses to symptoms could be confounded by symptom severity. However, the concepts chosen were theoretically expected to be related (Bowling, 2014). It would have been useful to include a validated measure of coping for further convergent validity and have a shorter test-retest timeframe. However, balancing participant burden and minimising attrition in clinical trials meant that this was not possible.

Finally, as this sample is a chronic and stable population, further validation in different clinical populations is required (e.g. first episode psychosis). Due to the lack of diversity in this sample it cannot be concluded that the response styles identified here are generalizable to all people with experience of psychosis. Further validation in non-clinical samples would also be beneficial to

determine if such responses are specific to psychosis or, as has been found in previous research on safety seeking, whether such responses exist on a continuum (Gaynor et al., 2013).

4.3 Implications

These preliminary results indicate that The MCR could be a reliable and valid measure that could be used in clinical work to identify and monitor responses used to manage distress in people with psychosis. The results suggest that the measure might be best employed as a situational measure, allowing analysis of response styles in specific contexts in clinical work. More research is needed on whether, or under what circumstances, responses can be considered to be helpful or unhelpful. Future research with the MCR should aim to further demonstrate convergent validity through assessing associations with measures of coping and to check the component structure in different psychosis populations. Beyond this, research could focus on whether The MCR is sensitive to response to treatment and if it relates to concepts of recovery, such as quality of life or functioning. Further understanding of this complex relationship could advance therapeutic work with people experiencing distressing psychosis.

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Table 1: Sample characteristics

Table 2: Results of the principal components analysis

Table 3: correlations between subscales and PANSS items

Appendix 1: The Measure of Common Responses to Unusual Experiences

Table One: sample characteristics

Age (N = 487) Mean (SD) Range	42.47 (10.56) 19 - 73
Gender (N = 487) Male Female	349 138
Ethnicity (N = 487) White British White Irish White other Asian Indian Asian Pakistani Asian Bangladeshi Asian other Black African Black Caribbean Black other Mixed - White and Asian Mixed – White and Black African Mixed – White and Black Caribbean Mixed - other Other ethnic group Prefer not to answer	421 2 21 5 5 2 1 1 4 3 1 2 7 6 5 1
Diagnosis (N = 487) Schizophrenia Paranoid schizophrenia Schizoaffective disorder Delusional disorder Drug induced psychosis Polymorphic psychosis Unspecified non-organic psychosis Missing	241 186 48 7 1 1 1 2
Years in Education (N = 452) Mean (SD) Range	12.49 (2.90) 0 - 27
Duration of Untreated Psychosis (months, N = 397) Mean (SD)	35.40 (57.45)
Duration of Illness (months, N = 458) Mean (SD)	229.17 (125.00)

Table two: Results of the principal components analysis (N = 244)

	Component		
	Social control and reassurance seeking	Threat monitoring and avoidance	Conscious self-regulation attempts
I talk to someone about my problems	.783		
I ask for help from friends or professionals	.735		
I try to tell as many people as possible about what is happening	.725		
I ask somebody if I'm going to be ok	.621		
I try to be with someone as much as possible	.590		
I isolate myself from other people		.734	
I avoid doing certain things or going to certain places		.733	
I have to leave a situation in a hurry or run away		.723	
I look out for danger when I'm out		.652	
I think about what I've done to deserve my unusual experiences		.650	
I try to think about my experiences in a different way or look for evidence			-.718
I try to control my experiences			-.711
I focus on myself and my behaviour			-.680
I try to calm myself			-.651
I think of ways to solve my problems			-.630
Cronbach's alpha (N)	0.746 (253)	0.757 (253)	0.712 (247)
Test-retest reliability (N)	0.41 (229)	0.66 (228)	0.47 (226)

Table Three: Correlations between subscales and PANSS items (N = 437)

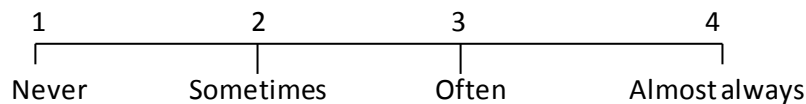
		Conscious self-regulation	Social control and reassurance seeking	Threat monitoring and avoidance	P1: Delusions	P3: Hallucinations	G2: Anxiety	G6: Depression	PANSS Total Score
Conscious self-regulation	Pearson Correlation	1	.368**	.254**	.081	.078	.014	.048	.096*
	Sig. (2-tailed)		.000	.000	.092	.102	.770	.312	.045
Social control and reassurance seeking	Pearson Correlation		1	.144**	.014	.052	.032	-.008	.012
	Sig. (2-tailed)			.002	.775	.277	.507	.861	.808
Threat monitoring and avoidance	Pearson Correlation			1	.165**	.148**	.343**	.309**	.232**
	Sig. (2-tailed)				.001	.002	.000	.000	.000

**Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

Appendix 1: The Measure of Common Responses to Unusual Experiences

People do a variety of things in response to unusual experiences such as hearing voices or worrying that they are going to be harmed. Although people are not always distressed by these experiences, we are interested in the ways that you typically respond to your experiences when you are distressed. Below is a list of responses that people sometimes use to cope or to prevent something bad from happening. Please rate how frequently you have typically used each of these responses over the past two weeks using the scale below. Your answers are confidential.



Response When I am distressed...	1 Never	2 Sometimes	3 Often	4 Almost always
1. I avoid doing certain things or going to certain places				
2. I drink alcohol or use drugs				
3. I try not to think about my unusual experiences				
4. I try to think positive thoughts or tell myself it will be OK				
5. I think about what I have done to deserve my unusual experiences				
6. I look out for danger when I'm out				
7. I ask for help from friends or professionals				
8. I try to be with someone as much as possible				
9. I get angry or aggressive towards myself or others				
10. I pray or go to a place of worship				
11. When I am upset or worried by my unusual experiences I try to calm myself				
12. I focus on myself and my behaviour				

13. I test out my fears about my unusual experiences by changing the way I respond				
14. I talk to someone about my problems				
15. I try to make sure I am prepared in case something happens				
16. I isolate myself from other people				
17. I think of ways to solve my problems				
18. I try to tell as many people as possible about what is happening				
19. I try to ignore my unusual experiences				
20. I have to leave a situation in a hurry or run away				
21. I do what I am told to do to avoid threat				
22. I do things to distract myself such as trying to keep busy or listening to music				
23. I go over and over my experiences in my mind and try to make sense of what is happening				
24. I do not tell anyone about my experiences				
25. I try to think about my experiences in a different way or look for evidence				
26. I try to control my experiences				
27. I ask somebody if I'm going to be ok				
28. I try not to attract attention to myself				
29. I make sure I am safe at home by checking for threats or locking the door				
30. I take medication				

31. I accept my experiences as a part of who I am				
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It would also be useful to know a bit more about the distressing experiences you were thinking of as you completed this questionnaire, for example hearing a threatening voice or feeling that someone is out to get you. Please use the box below if you would like to provide more detail about your experiences or any other responses that you use that this questionnaire has not asked you about.

Thank you for completing this questionnaire